This visualisation uses earth observation data to demonstrate how 2023 was a year of extremes in the ocean. As well as record-breaking heat over land and oceans (NOAA, 2024), the ocean itself experienced extreme sea surface temperatures (SSTs). This is important, because the ocean captures 93% of the world's excess anthropogenic heat (Levitus et al., 2012). 2023 also came with record-low Antarctic sea ice extent (Purich et al., 2023). Record extremes are concerning for the Earth's climate system and life it supports. However, as shown by the SST anomaly patterns, there are complex dynamics in play. I created this visualisation to inform people about these extreme climate phenomena we are already seeing, in the hope of spurring on the Sustainable Development Goal of climate action.

The data I used in this visualisation are:
- The NOAA 1/4° Daily Optimum Interpolation Sea Surface Temperature (OISST) - https://www.ncei.noaa.gov/products/optimum-interpolation-sst and Huang et al. (2021) https://journals.ametsoc.org/view/journals/clim/34/8/JCLI-D-20-0166.1.xml
- The NOAA Merged Land Ocean Global Surface Temperature Analysis (NOAAGlobalTemp), https://www.ncei.noaa.gov/products/land-based-station/noaa-global-temp
- NASA Blue Marble image from NASA Visible Earth, https://visibleearth.nasa.gov/collection/1484/blue-marble
- Sea Ice Index, v3 from the National Snow and Ice Data Centre, https://nsidc.org/data/seaice_index

I used python, including matplotlib and cmcrameri (a colormap package designed for accessibility and accuracy) to process the data and generate figures, and Canva to assemble the infographic.

National Oceanic and Atmospheric Administration (NOAA), 2024, https://www.noaa.gov/news/2023-was-worlds-warmest-year-on-record-by-far#:~:text=It's%20official%3A%202023%20was%20the,a%20record%20low%20in%202023 .
Levitus, S et al. (2012). https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2012GL051106
Purich, A., and Doddridge. E.W. (2023) https://www.nature.com/articles/s43247-023-00961-9